

Newport Beach Municipal Code section 10.26.045 limits the noise from sound-producing equipment to 50dB measured to the nearest outdoor living area or window, which ever is the least distance to the neighbor. This number can be raised to 55dB if a timer is installed on the equipment to shut it off between 10 PM and 7 AM. Those limits can be further raised to 65dB with a timer and the written permission of the affected neighbor.

Before issuance of a mechanical permit to install an AC condenser, the applicant must show compliance with the noise ordinance by providing the following information on two copies of plan sheet 2:

- (a). A copy of the condenser manufacturer's literature listing the decibel (dB) level of the equipment to be installed.
- (b). A site plan showing the location of the AC equipment and the distance to the nearest outdoor living area or nearest window of neighbor(s). Which ever is the least distance to the neighbor.
- (c). A scale drawing of any noise barrier if a noise barrier credit is going to be taken.
- (d). A calculation, using ARI Standard 275 tables, to demonstrate compliance.

Please see the information, tables and example on this plan sheet and provide the information requested on second sheet and third sheets.

The example shown does not begin to cover all of the different possible field conditions. Speak with a Building Department engineer or permit technician if you have questions.

Single Condenser Unit Installation

The basic procedure for estimation of the sound level at a given point of evaluation consists of combining the sum of several factors with the Sound Rating Level for the equipment. This is done and for an exterior condition at the nearest outdoor living area of the neighbor or at the nearest window.

	<u>Exterior patio or nearest window</u>
Sound Rating Level of Equipment (decibel level)	_____
+ Equipment Location Factor	_____
- Barrier Sheilding Factor	_____
- Distance Factor	_____
- Sound Path Factor	_____ 0 _____
= Estimated Sound level of Equipment at the Point of Evaluation (Neighbor)	_____ dB

Multiple Condenser Unit Installation

When there are two AC units, figure the dB level of each at the nearest window or patio of the nearest neighbor. Then use Table 2 to determine the overall combined sound level of the two units.

When there are three or more AC units, figure the dB levels of each at the nearest window or patio of the nearest neighbor, which ever is the least distance to the neighbor. Then, using Table 2, determine the overall combined sound levels of two units that are the loudest (loudest at the point of evaluation, i.e, the neighbor). Compare those combined sound levels with the third loudest unit and come up with another combined level, etc, until all units have been considered. Those final combined sound levels are the resultant of the multiple units.

Table 1:

Distance Factor	
ft.	Factor Value (dB)
4	9.5
5	11.5
6	13.0
7	14.5
8	15.5
9	16.5
10	17.5
15	21.0
20	23.5
25	25.5
30	27.0
40	29.5
50	31.0
60	33.0
70	34.5
80	35.5
90	36.5
100	37.5
125	39.5
150	41.0
175	42.5
200	43.5
400	49.5

Distance factor: The direct distance, D, from the equipment location to the point of evaluation is a very significant application factor in determining the estimated A-Weighted sound pressure levels resulting from the operation of outdoor equipment in any installation (This value is subtracted from the dB level of the equipment).

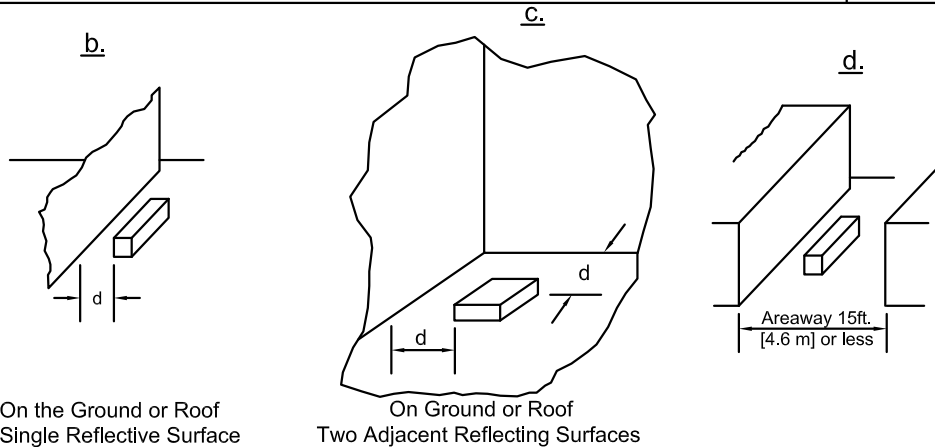
Table 2:

Table 2 Values Used for Combining Numbers for Multi-Unit Installations	
Difference Between numbers (dB) at point of evaluation	Value to be added to Larger Number(dB)
0.0 to 0.5	3.0
1.0 to 1.5	2.5
2.0 to 3.0	2.0
3.5 to 5.0	1.5
5.5 to 7.0	1.0
greater than 7.0	0.0

Equipment Location Factor:

This factor takes into consideration the effect of walls and other reflective surfaces adjacent to the equipment. (This value is added to the basic dB level of the equipment.)

Equipment Location Factor	Factor Value (dB)
a. Equipment on the ground or roof or inside of building wall with no adjacent reflective surface within 10 ft. (3m) (d greater than 10 ft. [3m])	0
b. Equipment on the ground or roof or inside of building wall with a single adjacent reflective surface within 10 ft. (3m) (d less than 10 ft. [3m])	3
c. Equipment on the ground or roof or inside of building wall within 10 ft. [3m] of two adjacent walls forming an inside corner (d less than 10ft. [3m] to both surfaces)	6
d. Equipment on the ground or roof or inside of building wall and between two opposite reflecting surfaces less than 15 ft. [4.6m] apart.	6



Barrier Shielding Factor

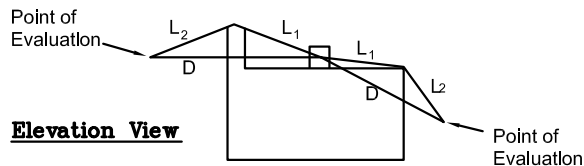
(see sketches below). Sound reduction benefits can be gained when a solid structure obstructs the sound path. These structures could be:

- a. Corner of building
- b. Corner of flat roof and wall
- c. Parapet around flat roof
- d. Heavy continuous wall (3.5 psf min. Note: Typical wood fence is not adequate.)

(The Factor Value determined from Table 3 is subtracted from the dB level of the equipment.)

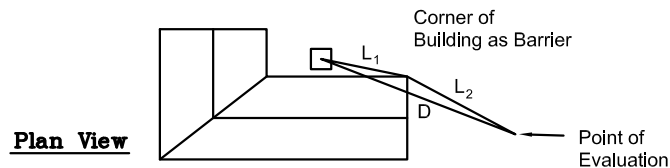
Example 1

Flat roof and parapet walls as barriers



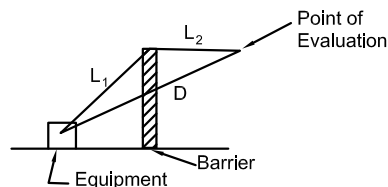
Example 2

Corner of building as barrier



Example 3

Property line wall as barrier



$L = L_1 + L_2$ D, where:

$L_1 + L_2$ = Distance from equipment point of evaluation around barrier (use minimum $L_1 + L_2$ value).

D = Direct distance from equipment to point of evaluation with no barrier. Determine D by layout sketch.

L ft.[m]	Factor Value
0.5[0.15]	4dB
1[0.3]	7dB
2[0.6]	10dB
3[0.9]	12dB
6[1.8]	15dB
12[3.7]	17dB

Table 3

Sound Path Factor (This value is subtracted from dB level of equipment)	Factor Value
a. To a point of evaluation	0 dB



CITY OF NEWPORT BEACH

BUILDING DIVISION

3300 NEWPORT BLVD P.O. BOX 1768.
NEWPORT BEACH CALIFORNIA, 92658-8915



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Exterior patio or
nearest window

Sound Rating Level of Equipment (decibel level) _____

+ Equipment Location Factor _____

- Barrier Shielding Factor _____

- Distance Factor _____

- Sound Path Factor _____

0

= Estimated Sound level of Equipment
at the Point of Evaluation (Neighbor) _____ dB

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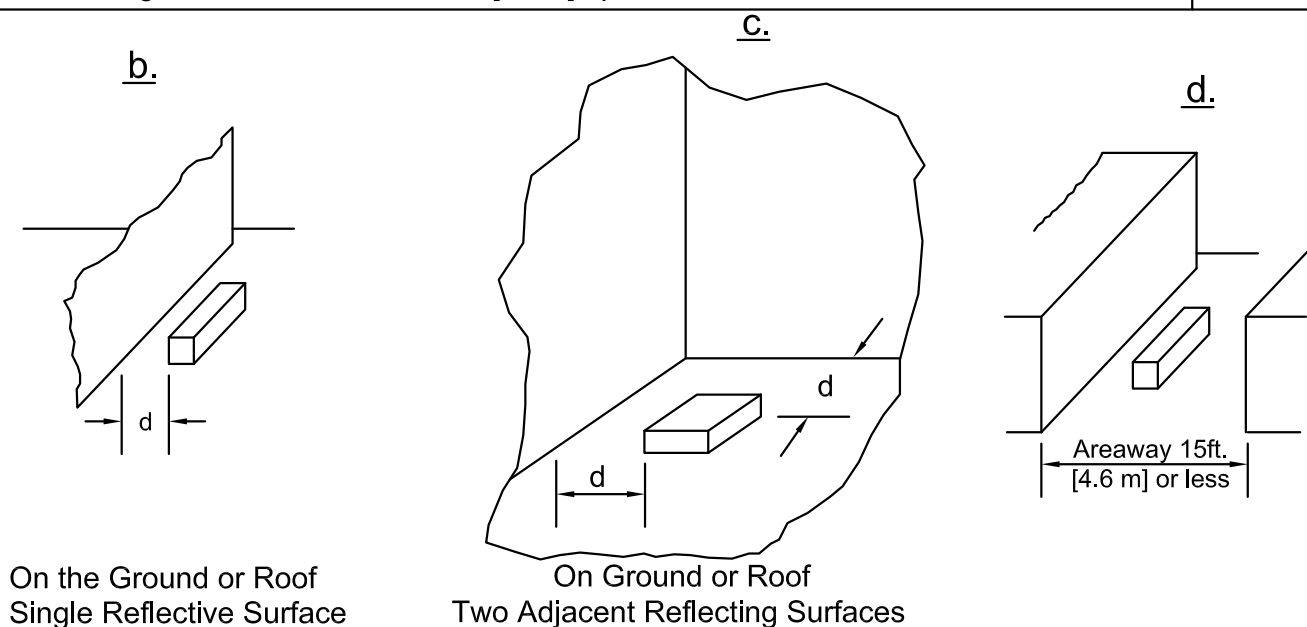
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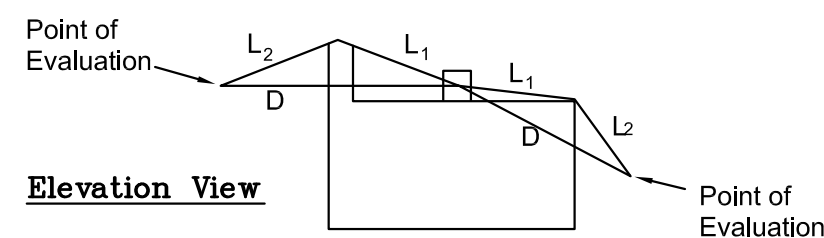


Barrier Shielding Factor (see sketches below). Sound reduction benefits can be gained when a solid structure obstructs the sound path. These structures could be:

- Corner of building
 - Corner of flat roof and wall
 - Parapet around flat roof
 - Heavy continuous wall (3.5 psf min. Note: Typical wood fence is not adequate.)
- (The Factor Value determined from Table 3 is subtracted from the dB level of the equipment.)

Example 1

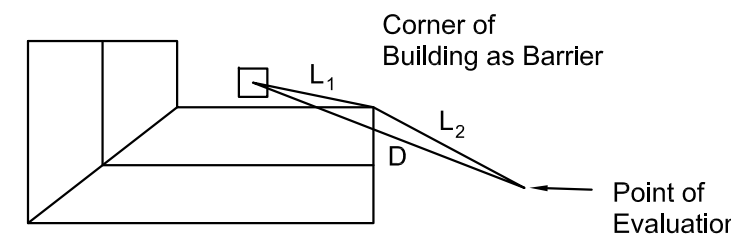
Flat roof and parapet walls as barriers



Elevation View

Example 2

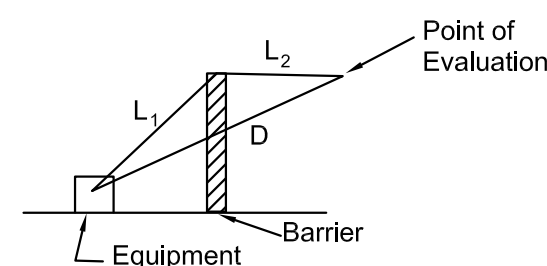
Corner of building as barrier



Plan View

Example 3

Property line wall as barrier



$L = L_1 + L_2 - D$, where:

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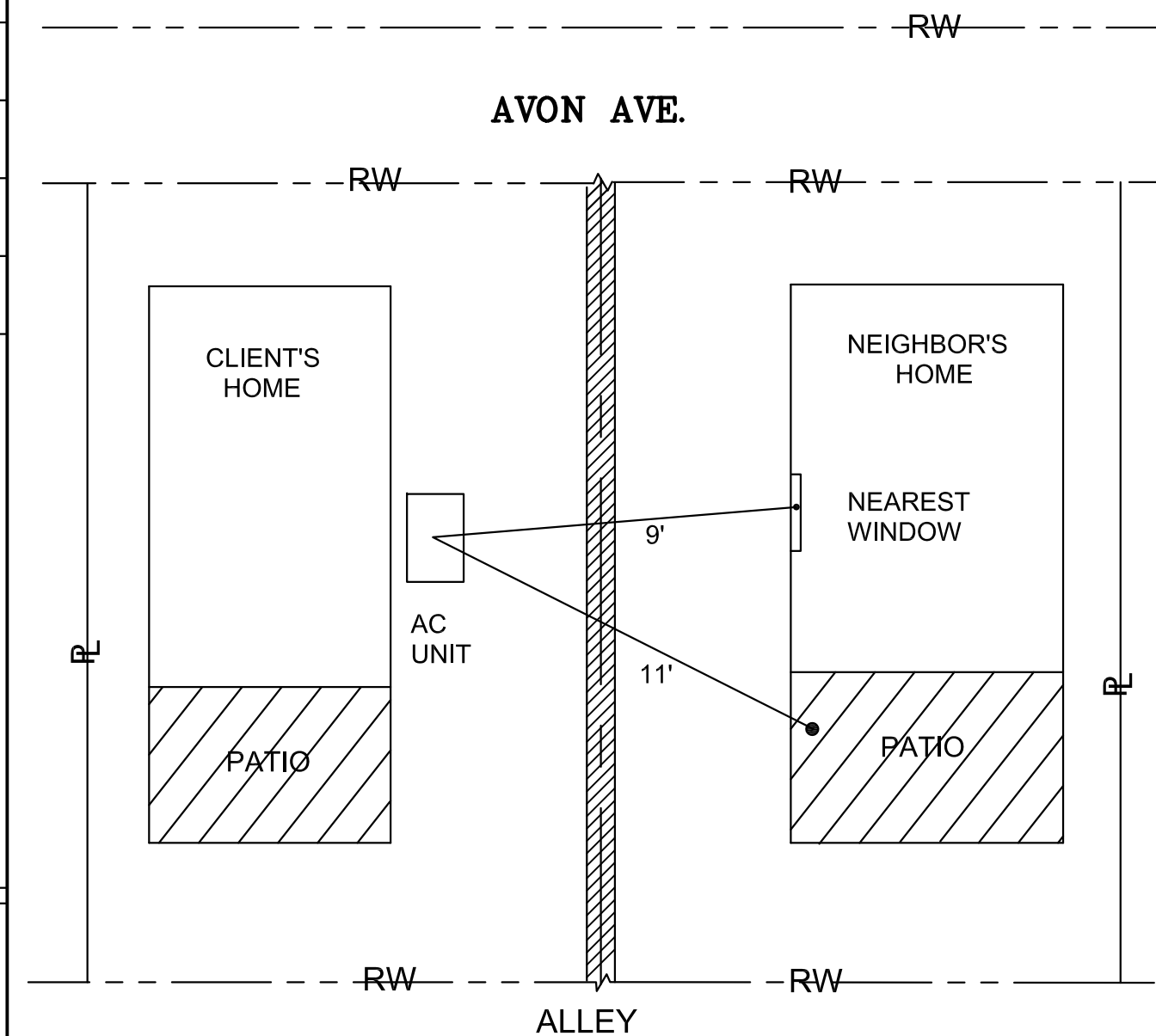
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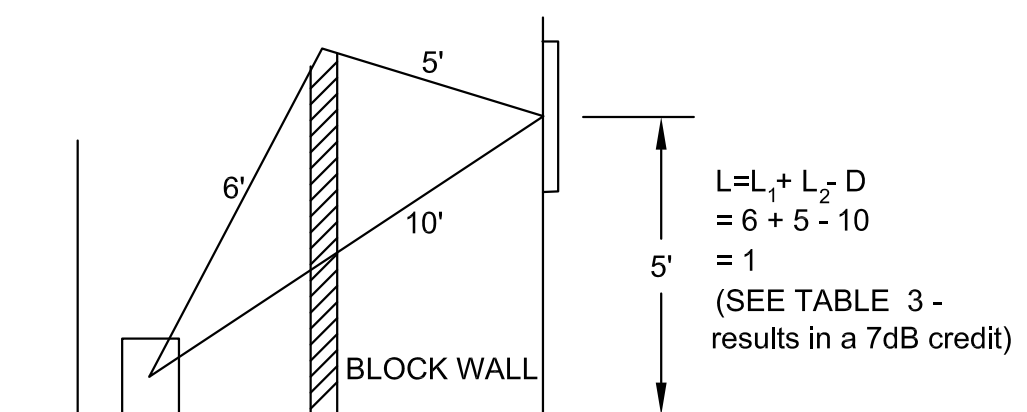
EXAMPLE SITE PLAN

PLAN VIEW



EXAMPLE BARRIER SHIELD ANALYSIS

ELEVATION VIEW



$$L = L_1 + L_2 - D$$
$$= 6 + 5 - 10$$
$$= 1$$

(SEE TABLE 3 - results in a 7dB credit)

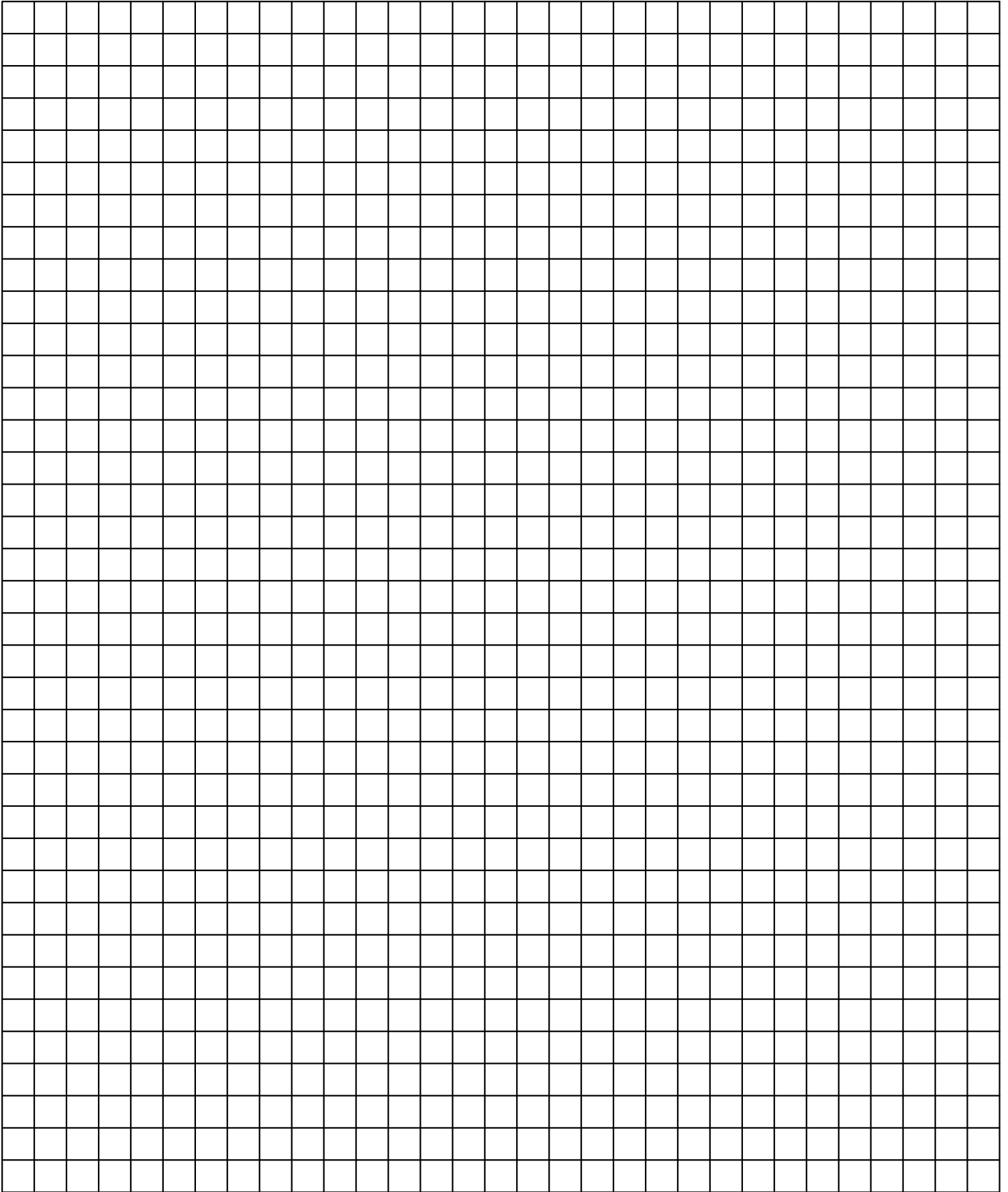
Example Calculations: Exterior

dB Level of Equipment	72
+ EQ. Location Factor	+ 6
- Barrier Shield Factor	- 7
- Distance Factor	- 18
- Sound Path Factor	- 0
= 53 dB < 55 dB	
O.K. W/ Timer	

A.C. CONDENSER NOISE ANALYSIS INSTRUCTION SHEET

DATE: Oct 2009	DRAWN BY: RO	APPROVED BY:	SHEET 1 OF 2
FILE NAME: F:\Users\IPBW\Shared\CADD\Bldg Dept\Condenser Noise Analysis_v09.dwg			

BARRIER SHIELD



(NOTE: BARRIER DRAWING MUST BE TO SCALE)

PRODUCT DATA SHEET (LISTING dB LEVEL)

UNIT #1

Exterior

dB Level of Equipment

+ EQ. Location Factor

+ _____

- Barrier Shield Factor

- _____

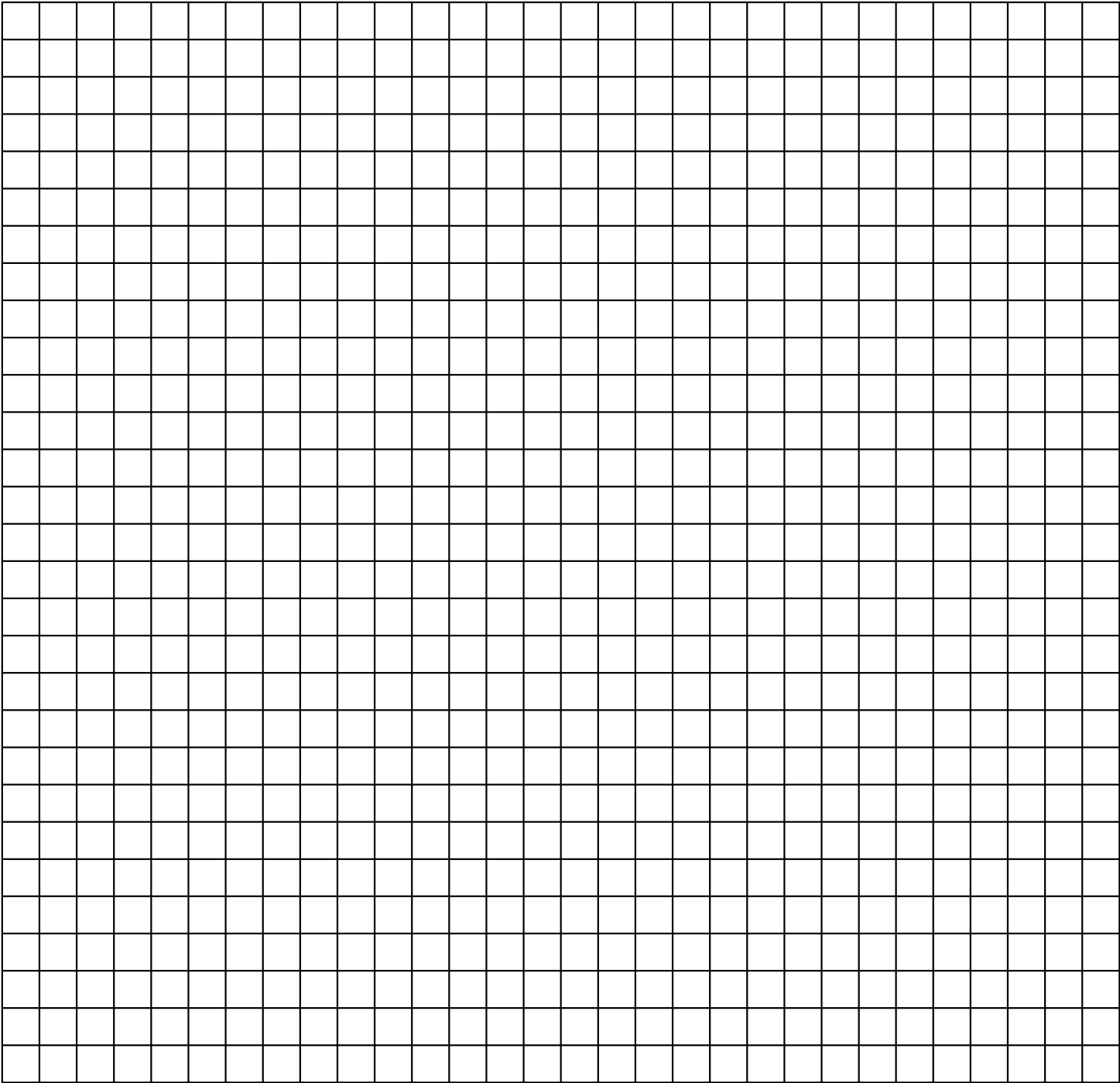
- Distance Factor

- _____

- Sound Path Factor

- 0 _____

SITE PLAN



UNIT # 2 (IF APPLICABLE)

Exterior

dB Level of Equipment

+ EQ. Location Factor

+ _____

- Barrier Shield Factor

- _____

- Distance Factor

- _____

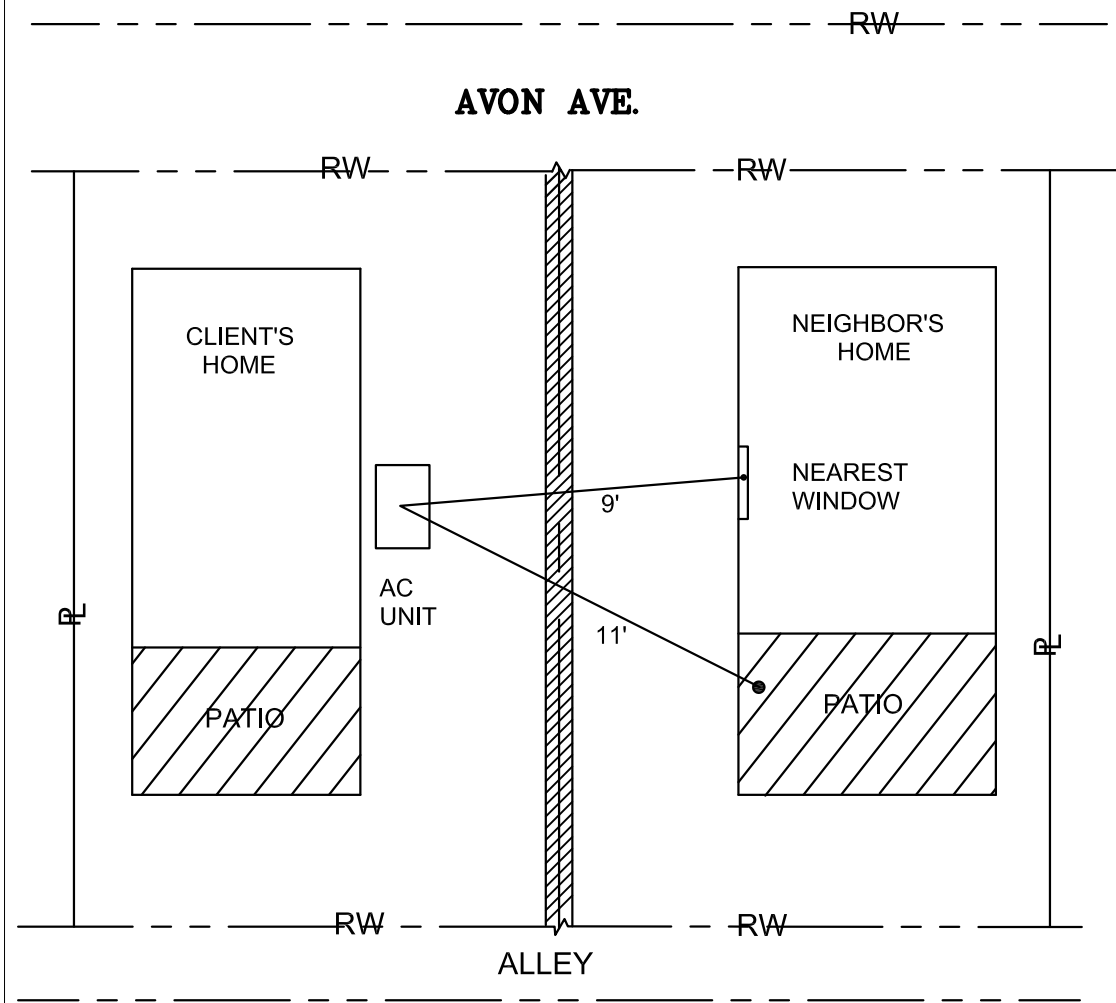
- Sound Path Factor

- 0 _____

= _____ dB

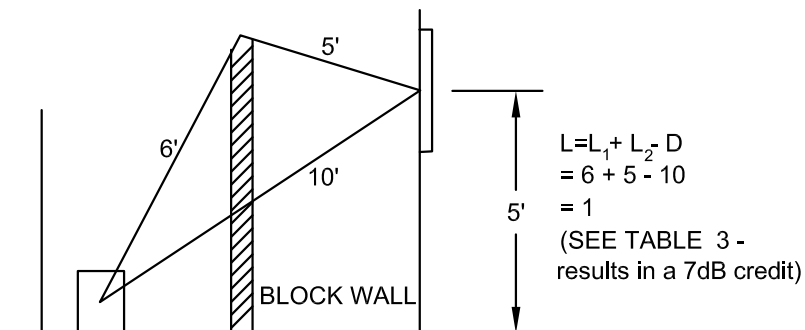
EXAMPLE SITE PLAN

PLAN VIEW



EXAMPLE BARRIER SHIELD ANALYSIS

ELEVATION VIEW



Example Calculations: Exterior

dB Level of Equipment	72
+ EQ. Location Factor	+ 6
- Barrier Shield Factor	- 7
- Distance Factor	- 18
- Sound Path Factor	- 0

$$= 53 \text{ dB} < 55 \text{ dB}$$

O.K. W/ Timer